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# THE ROLE OF INSTITUTIONS TO SOLVE SOVEREING DEBT PROBLEMS: THE SPANISH MONARCHY´S CREDIT (1516-1665)*

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**Abstract**

The Spanish Monarchy borrowed foreign credit during more than 150 years despite repudiating its agreements from time to time.According to the extant literature on sovereign debt, lenders should not have lent any money to the Spanish Monarchy, especially because they were not organized as a cartel. Sovereign debt theory asserts that the principal constraint on sovereign behavior is the penalty that lenders or an external organization can impose on the borrower. When the sovereign decides whether to honor the loan agreement, his main consideration lies on the size of the penalty he will suffer in the event of a default. The inability to punish the sovereign does not lead to indiscriminate reneging, but to an absence of credit. Thus, the extant theory cannot explain the borrowing that took place in Castile during a large part of the Habsburg dynasty (1516-1665).

This paper explains why, in the absence of penalties and having experiences of defaults, bankers kept lending. The mechanism that made this credit possible was based on expectations of the king's revenues in any given period. Bankers did not have to punish the sovereign because the king was trying to cooperate with many lenders to reduce uncertainty about future credit and to expand the amount of money available.

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# THE ROLE OF INSTITUTIONS TO SOLVE SOVEREING DEBT PROBLEMS: THE SPANISH MONARCHY´S CREDIT (1516-1665)[1]

## Introduction

It is widely known that the Spanish Monarchy had a great capacity to borrow from foreign bankers during the sixteenth and seventeenth centuries. Scholars have described the financial system of Castile and the important role played by the credit to maintain the imperial policy. (Carande 1949-67; Domínguez Ortiz, 1960; Ulloa, 1963; Artola, 1982, Ruiz Martín, 1970; Boyajian, 1983; Maddalena e Kellenbenz, 1986). The Spanish Monarchy was able to borrow from many merchant-bankers in order to pay for its wars in Europe. Many foreign companies, especially Italian, provided money and financial services to the Spanish kings.

The Spanish Monarchy, as well as other medieval and early modern European sovereigns, had problems making credible commitments to honor its financial agreements (North, 1990, 1993, Hoffman and Norberg, 1994). Periodically, there were financial crises involving suspension of payments by the Crown, bankruptcies of some bankers, and defaults in the contracts. These crises damaged the relationship between the Monarchy and bankers, but the crises were not an obstacle to get more credit over time.

The history of sovereign debt in this period poses a puzzle: why did bankers continue to invest in loans to the King of Spain who repeatedly suspended his payments? As expected, the king could cancel his obligations whenever he wanted to after the lender had risked his money. One could argue that reputation and future borrowing needs could prevent the Monarchy from cheating the banker. However, the bankers and the king knew their relationship was finitely lived, so bankers could look forward and anticipate that the king would default in the last period. Carrying this logic further to earlier periods would lead to an outcome in which lending would

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not have been provided in any period. Historical evidence proves, however, that despite a finite horizon, and the periodic cheating of the king, lenders and Spanish Monarchy continued to cooperate and maintain their credit relationship.

This puzzle can be rephrased as follows: how can the close relationship between bankers and the Spanish Monarchy be explained for all those years? Did they make "irrational" economic decisions? What were the gains for bankers from lending to such a dangerous debtor? This lending is especially notable, given that bankers did not coordinate their actions. In the absence of a group penalty, why would the king pay when he could expropriate the funds without suffering harsh retaliation? The institutional literature predicts that without credible institutions for protecting property rights, such credit would not have been provided. Sovereign debt theory analyzes reputation as arising through repeated interaction that generates equilibrium with self-enforcing lending agreements.

Theory and evidence concentrate on the ability of organized bankers to punish kings who renege on their debts. Sovereign debt theory says, that the principal constraint on sovereign behavior is a penalty, *P*, which lenders can impose on a sovereign (Bulow and Rogoff 1989, Eaton et all 1986). This penalty also provides a ceiling on the level of sustainable debt.

Bulow and Rogoff (1989) assume that lenders can impose additional and more costly penalties beyond cutting the sovereign off from credit in the future. The debt ceiling increases with the severity of the punishment. But lenders do not lend as much if they are not able to coordinate a boycott because the boycott is their best penalty. Cole and Kehoe (1994) explore an additional penalty model where sovereign and lender receive benefits by cooperating in a related no-lending relationship. The lender links cooperation in a no-lending relationship to the repayment of loans by the borrower. It creates a penalty to sustain positive lending. Grossman and Van Huyck (1988) and Atkeson (1991) also derive positive lending equilibrium when partial defaults and debt rescheduling are not violations of the agreement between sovereigns and

Joan Rosés and participants in the seminars: Workshop in Comparative Politics and Historical Analysis and Workshop in Social and Economic History, at Stanford University.

lenders, but an unexpected fiscal shock suffers by the sovereign. In this case, the lenders do not implement the penalty.

Recently, Conklin (1998) has applied some of these debt models to study the loans provided by a group of Genoese bankers to Philip II of Spain (1556-1598). He considers this group of bankers as a cartel and identifies a boycott as the penalty imposed by the group to enforce their loans. There are two problems with his explanation. First, there was no cartel during the reign of Philip II and neither before or after his reign. Second, what were the incentives of bankers to initiate the boycott, to implement the penalty, given that some of them were hurt by the arrangement reached to restore the credit negotiations?

Weingast (1997) has developed a model that explains how the institutional change following the Glorious Revolution in England allowed a dramatic increased of the government's credit limit. His model concludes that a limited sovereign would have more opportunities to get larger amounts of credit than an absolutist. Again, the penalty of the lenders is the key of his argument. In the English case, the Parliament would limit the king to renege the contracts and helped the coordination of lenders to punish him largely for a credit boycott in case of default.

The problem with "penalty" models is that they require a strong ability by lenders to punish the sovereign in case of default. Moreover, for the penalty to be credible, bankers need to coordinate their actions. Otherwise, the inability to strongly punish the sovereign implies an absence of lending (Greif, Milgrom and Weingast 1994). From the declining marginal productivity of capital it could be derived that the sovereign would be indifferent between obtaining the last loan or not, and it would be an incentive to cheat the last lender.

This paper shows that the Spanish Monarchy, despite being an absolutist government did not need to be controlled by other institutions to have access to important amounts of credit. The kings of Spain got enough credit to maintain their wars because of a particular game created by the Monarchy to bargain with its bankers. Bankers had enough incentives to lend in some circumstances, even though they were not a cartel and they did not have enough power to punish the sovereign.

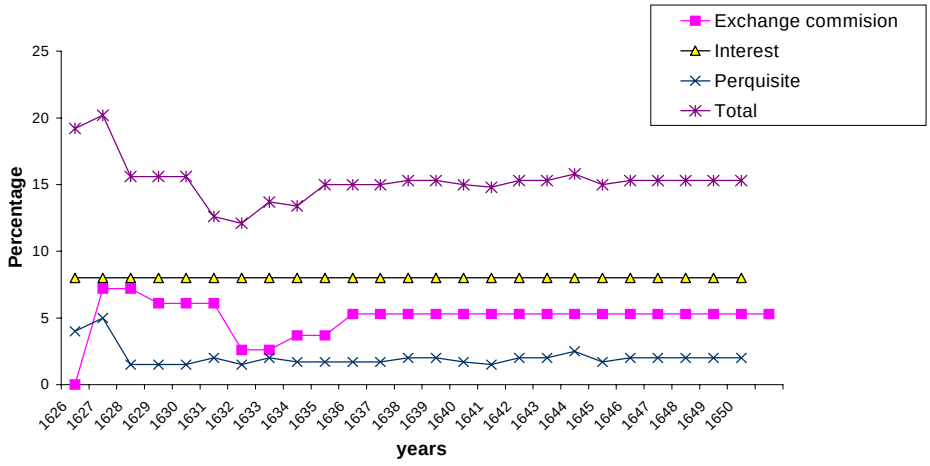
Another issue explored by the literature of sovereign debt is the limits of credit available for the sovereign. Models imply that any increase in the penalty that can be imposed on the sovereign will increase the amount of credit available. However, the literature does not explain the problems for the sovereign derived from a very strong group of bankers. If the bankers were so powerful against the king that they could control his actions, they would be able to increase the price of their loans. The king would be a price taker with a horizontal demand curve of credit, while the bankers would be price searchers with a demand curve negatively sloped, reflecting their market power. They could control the price and quantity of credit, maximizing his profits by choosing the amount of credit for which marginal revenue is equal to marginal cost.

There are two consequences derived from this situation. First, the amount of credit would be less than it would be supplied at the intersection of the price of the marginal cost curve with the demand curve. Second, supply of this amount of credit results in a higher price for the sovereign at every amount of credit. A coordinated group of bankers will offer less credit than several lenders in competition facing identical cost functions and the same demand curve from the king.

Traditionally, historians have explained the credit of the Spanish Monarchy by a high risk-premium paid by the king in the loan contracts, also called "*asientos*". This would explain why the Monarchy was always complaining about prices. However, historical evidence does not corroborate this claim. The interest charged in the *asientos* experienced a decline between the reign of Carlos I (1516-1558) and Philip IV (1621-1665). For example, the interest rate of the "*asientos*" stood at 14 percent per year during the sixteenth century[2]. After 1609, with the truce in the Low Countries, the rate dropped to 12 percent for the first year of the contract and 8 percent thereafter. The 8 percent interest was the base rate that the Crown paid on straight borrowing on Castile, whenever foreign exchange and foreign remittances costs were not involved (Figure 1).

Figure 1. Cost of the "*asientos*" signed by Portuguese bankers, 1626-1650.

[2] Carande (1968), vol. 3, p. 12.




Source: Boyajian (1983), p. 166, table 7.

This rate was comparable to short-term interest available anywhere, including places like Amsterdam[3]. Furthermore, high interest charged in the credit contracts does not resolve the risk problem involved in this relationship. The king could revoke his promise of repayment anytime after the banker advanced the money.

In order to explain the Spanish Monarchy's case, this paper presents a model focused on the sovereign's incentives to extend cooperation over time rather than on the lenders' power to punish him or the existence of an institution to control him. Here we consider two important elements: First, the powerful self-enforcing nature of the value that a stable cooperation with the bankers over time had for the sovereign. It does not depend on the lender's penalty but on the conditions that make the credit cooperation an essential part of the financial system of the Crown. And second, we show the importance of the banker's beliefs about the true interest of the king in keeping his promises.

This paper has three sections. First, section I explains the incentives of the Spanish Monarchy to establish a permanent cooperation with foreign bankers and its characteristics. Section II presents a model of cooperation as a game with potential gains for each player. The third part, section III, uses historical data to show how well historical events correspond to the assumptions and predictions of the model. The final section IV concludes.

## I. Reasons for the king to borrow short-term credit from foreign bankers

The Spanish Monarchy needed large amounts of money every year to pay its armies and other expenses in Spain and in the balance of its European territories. Taxes were collected throughout the fiscal year while expenses had to be done monthly. Surpluses from the fiscal system of Castile made it possible to support this effort during the sixteenth and seventeenth century, but the Crown had to transfer its money from Castile to different places in Europe in order to pay its army with regularity in Antwerp, Germany and Italy, far away from the centers where the main revenues were collected.

If the king wanted to have credit in different places of Europe and different currencies, it was essential to have access to a vast financial network of agents able to transfer money safely and quickly to different places. The Monarchy did not have the administrative efficiency that merchant-bankers could provide. These bankers had developed complex networks during the Middle Ages in order to trade, to provide credit to the commercial sector and to speculate in the financial sector. These networks were used by the Monarchy to gain credit and financial services more efficiently than using royal officials.

In the first decades of the sixteenth century, the Crown tried to get part of its credit borrowing from commercial creditors, in the flourishing Castilian and Brabant fairs[4]. Independent and small merchant-bankers, that many times they did not live in the court, provided credit to the Monarchy. Soon problems emerged. If royal officials could not pay their assignments on time (i.e. because the treasure fleet from America had not arrived yet), the payment dates of the Castilian fairs had to be extended, affecting all commercial businesses. The first time this happened was in 1543. After that date, extensions were more frequent and of longer duration, upsetting the cycle of the fairs of payment[5]. As a consequence, many merchants went out of business, and bankruptcy spread quickly among commercial businesses. This situation also hurt the Monarchy because it was very difficult to borrow again the following year.

[3] Boyajian (1983), p. 168.
[4] Ruiz Martín (1970).

Some years later, in 1568, the Monarchy had even more problems borrowing in these kinds of markets because the Rebellion in the Netherlands blocked the exports of wool to the Low Countries, reducing the trade and the amount of money available in the hands of local merchants[6].

The ideal scenario for the Crown would have entailed a big and strong credit market with many lenders able to offer all the credit that was needed. Fairs could not play this role because they had been created to support trade, not to lend and transfer large amounts of precious metals around Europe borrowed by only one agent. Moreover, the risk and the urgency of these credit demands increased the price that the king had to pay. A good example of this situation was the high prices that the Monarchy paid in Catalonia when it borrowed among the local merchants in 1575. Many of the bills of exchange issued in Barcelona payable in Lyon had 5 to 11 percent interest rates for only two or three months[7]. It was three or four times the regular price of a normal credit contract ("*asiento*") signed on with a banker in Madrid.

Over time the Crown solved this problem by creating its own private credit market, setting up bilateral and stable relationships with the most important merchant-bankers of Europe. The Crown signed loan contracts, formulating and scheduling the whole compensation scheme, including interest, for the bankers. The debt was usually paid between one or three years after the lender had advanced the funds. Repayment included other non-monetary rewards, like honors, protection in the territories of the Monarchy, licenses to trade in America, and social prestige, among others. An important characteristic of the credit negotiations was that most of bankers or their agents stayed in the court, living close to the king. The Council of Finance always promoted it. Every year the official credit negotiations in Madrid with a small number of bankers permitted the king to borrow the most important part of its credit avoiding capital markets.

The international network controlled by big merchant-bankers enabled them to mobilize private savings to lend to the Spanish Monarchy. The circle was closed by transferring capital

[5] Van der Wee (1977), p. 368.
[6] Ruiz Martín (1970), p. 98.

from Spain to their correspondents regularly, using mechanisms like the bill of exchange and the "ricorsa" (Mandich, 1953)[8]. This mechanism permitted the Crown to extend the time required to repay its debts for years, according to its fiscal system, and avoid the very short terms demanded by the lenders from commodity markets and fairs.

## II. The game of credit: a model

Consider a simple three-stage game with complete but imperfect information. There are two players: the king and a banker. The game starts when the king borrows from the banker a certain amount of money, *M*, and several financial services, *F*, offering him a contract ("*asiento*"). This contract takes the form of a promise by the sovereign to repay the principal of the loan, *M*, plus interest, *i*, and a non-monetary reward, *T*. This reward will be always enjoy by the banker when he lends his money to the king, even if the sovereign decides to default the contract.

The opportunity to borrow from a banker is an important benefit for the king and it is represented in the game by the variable called *B*. It means how much a future relationship with the banker is important for the king now. *B* modifies the king's payoffs because the king knows that choosing "cooperation" with the banker now will help him to finance and defeat in the war now and in the future. Any "non cooperation" outcome will break his relationship with the banker, and as a consequence, he will not get more credit. Without credit, the king will be defeated in the battlefield too. It makes B a large value.

When the king does not need bankers in the future or the Monarchy does not have revenues to bargain a new credit with him, *B* is zero, and the contrary makes *B* a large value. We assume that *B* has a large value because the king always needs credit and financial services from

[7] Hernández (1997), p. 77.

[8] The bill of exchange was a common mechanism used by bankers and merchants to transfer funds between different cities. In the standard bill transaction, the purchaser of a bill of exchange understood that the value paid for the bill, minus any exchange costs, was repayable by the drawer's (seller of the bill) correspondent at a future date, and in another location. Usually, the banker drew such bills on their correspondents to pay the subsidies as provided in the credit contract. The banker had only to draw his own bill directly on a foreign correspondent, payable to the correspondent on his orders. Provided that he accepted the bill, the correspondent noted it as both a credit to himself (or the third party) and a debt, or charge, against the lender's account. By prior agreement between the banker and the correspondent, the latter also cleared the debt with a bill, which he drew on the banker in the same amount, or perhaps by bullion sent some time later.

the bankers in order to maintain an army and defeat his enemies. However, *B* does not depend only on the King's wishes to borrow but also on his revenues. Without money the king knows that he cannot get credit form the banker and it reduces the utility of having a banker in the future.

The rest of variables in this game are fixed by the negotiation between king and banker in a contract of credit and their values are well known by both players (See all variables in appendix I).

*The revenues of the king are an important element in the game*

The value of *B* in the king's payoffs is linked to the financial situation of the Monarchy each time the game is played. The sovereign will honor his promises made in the contract of credit when he has enough revenues to repay the banker and gain his political goals. The problem surges when the king has only enough money to do one of both things. In this case, the banker will be less important than the political affairs, even though his role in the financial system is very important for the king. The king needs the banker to provide credit in order to pay his armies in other countries, but if he does not have enough revenues to give him the money back and to pay the armies, he would prefer to cheat the banker rather than to lose the war.

By canceling payments, the king would not lose anything in terms of future credit, because at that point he would not have enough money to get it. But with the suspension of payments he can save at least a positive expense in the present period (the principal and interest promised) that he can use to pay the present expenses or perhaps to borrow again in a new game with a different banker.

The ability of the king to fulfill the loan contract lies on an exogenous factor that is private information of the king. There are two possibilities: revenues (R) or not revenues (NR) (figure 2)[9]. With revenues (R), the king will pay the money back because he has money and incentives to do it, but without them (NR) the king will default because the value of B will be

[9] In order to know it, the lender should have to know the amount of revenues available (See appendix II).

zero and then the king's payoff is higher cheating to the banker than cooperating. Both situations are partially exogenous to the game because it depends on the fiscal system or on external events. However, the banker could monitor the fiscal system of the king and estimate the probability of facing each situation.

The revenues of the Monarchy make the relationship between the king and the banker a game of complete but imperfect information. It is complete information because each player's payoff function is common knowledge, but it is imperfect because the banker does not know exactly the ability of the king to repay before making his decision when it is critical to determine whether the king is going to cooperate or not. The banker is very interested in knowing the probability [p] of (R) or (NR) before accepting the contract. And the sovereign will be very interested in showing the lender that he has enough revenues to repay (R) in order to get his cooperation.

*The payoffs*

We have two players (banker and king) and both of them have two strategies: to cooperate or not to cooperate. In the first stage, the banker has received a demand of credit from the sovereign and he has to decide between lending the money (C) or not accepting the contract (NC). The banker is not sure from the beginning whether or not the king is able to accomplish his promises. In fact, the king could try to cheat the banker proposing a lemon contract. The banker must have a belief about the revenues of the Monarchy (or, equivalently, about whether the king will be able to repay (C) or not (NC)). This belief is represented by the probabilities [p] and [1 – p] attached to the strategies of Nature (figure 2).

In a second stage, Nature moves and decides the revenues of the Monarchy. If (NR), it means that the king has not enough revenues to pay the banker and the king will renege his contract. The banker looses the principal of the loan, but he keeps the non-monetary rewards. The king receives the financial services from the banker, the principal of the loan and he just has to pay the non monetary rewards. If (R), it means that the king has enough revenues to repay the

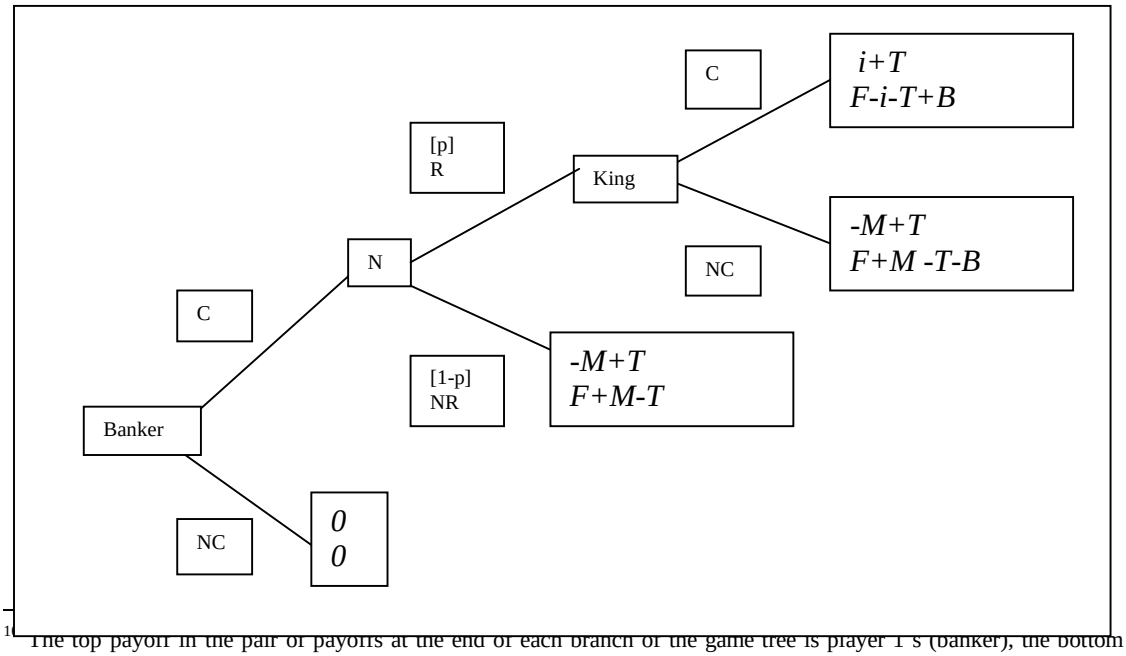
contracts and B will have a large value. It will be enough to make “cooperation” a decision more profitable for the king than a default.

In the third stage, once it has been confirmed that the king has revenues to honor the contracts, the king has to decide between repayment (C) or not (NC), and the game ends.

The king will choose (C) whenever $B > (M + i)/2$ and the banker receives the price promised in the contract. In this case, the banker will get an interest ($i$) and the non-monetary rewards (T). The king will receive the financial services (F) he was looking for and the benefits of having a banker available to borrow again next time (B). It is the best outcome of this game for both players.

If the king chooses to renege the contracts (NC), the banker will loose the principal, but he will enjoy the non-monetary rewards anyway. The king will obtain the financial services and the principal but he will suffer the consequences of cheating the banker in this game, loosing the possibility of borrowing again. In the mind of the king it means to be defeated in the war. Given the assumption that $B$ has a large value, the payoff of the king after cheating the banker will be smaller than choosing “cooperation”.

Figure 2. Game of credit[10]




[10] The top payoff in the pair of payoffs at the end of each branch of the game tree is player 1´s (banker), the bottom player 2´s (king).

The banker has to decide whether to cooperate or not after checking up the probability that the king has enough revenues to repay. The main condition for the cooperation of the banker is (See calculation in appendix II):

$$T > M - [p]\, i - [p]\, M \qquad (1)$$

This inequality (1) shows that the banker will cooperate depending on the benefits offered by the king in the current game and the probability of default [1– p]. In this game the banker is not looking at future payoffs from possible repeated games and he does not care about the behavior of the king in the past, he is concerned only about the profits that he can get in this game and the probability that the king cooperates now.

In this game, the banker's beliefs about the king's revenues play an important role to reach the cooperative equilibrium. In fact, the equilibrium consists of a strategy for each player and also a belief of the banker about the intentions of the king[11]. The king will always try to increase the confidence of the banker about him to avoid low values of [p] in his mind.

Consider the different beliefs that the banker could have about the behavior of the king depending on the available revenues (the value of [p]). If the banker is completely sure that Nature moves R, that the king has enough funds to accomplish his promises at the end of the game, then [p] =1. An absolute certainty that Nature is NR, then [p] = 0. This option means that the banker knows that the sovereign does not cooperate because there are not funds to maintain the relationship with the lender and then the value of having a banker (B) will be zero.

The banker has a great incentive to monitor the probability of R in order to predict the action of the king. Any problem of the lender to calculate [p] would induce him to make a mistake in his decision. The mistake could induce the banker to lend. If the king chooses (NC), the banker will lose the principal of the loan and he will be broken. If the mistake pushed the banker to choose (NC), the banker loses the non-monetary rewards, *T*, and the interest. There will

not be contract. This is a bad outcome for the king because he finishes the game without the financial services of the banker and he believes that in this case his enemies will defeat him in the war. The king will be very interested in avoiding this second kind of mistake, but not always the first one.

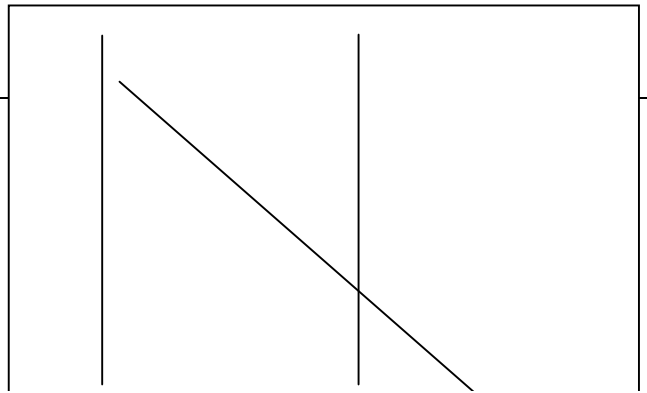
*The king may play the game with several bankers at the same time*

The king is looking for a certain amount of credit (M) to be able to finance his annual budget. Neither banker is able to lend the whole amount, so the king needs to borrow from several bankers at the same time in order to collect all of credit he needs.

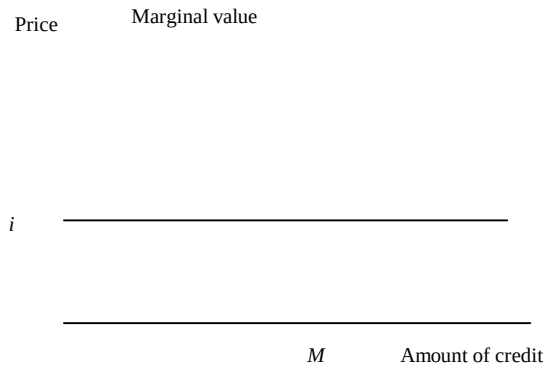
However, when there are several bankers lending at the same time without being coordinated, we find the problem related to the decreasing marginal productivity of capital for the sovereign[12]. If the Crown has funds available at an interest rate of *i*, then the optimal sized loan is at *M*, where the marginal productivity of the last gold coin is exactly equal to the sovereign's cost of borrowing the gold coin, *i*. Raising funds to the optimal limit, at *M*, implies that the first few loans are very valuable to the sovereign, but the last few loans are not. The reason is that at *M*, the sovereign's marginal value of the last loan is exactly equal to its costs and hence has a net value of zero (figure 3).

If the king were able to get all the credit needed from the first banker, the value of playing with the second would be zero. The only concern of the king will be to repay the debt to the first banker at the end of the game in order to play again the next time. In this case, the second banker is unnecessary for the Crown, and if the lender had decided provide any loan, the sovereign could cheat him without suffering any cost. Because the second banker could expect this behavior, the value of *B* in the game of credit (figure 2) would be zero for him and he would not cooperate.

Figure 3. The marginal value of loans



[11] Kreps and Wilson (1982).




It is important to remember that, as it was explained before, the bankers were not only offering money, but financial services. In fact, the big problem of the Monarchy was not the money but the transference of its revenues from Spain to Europe. It had many problems and high costs without the help of bankers. Furthermore, the sovereign was aware that not every lender could offer the same services to the same cities with the same easiness every year. On the other hand, no one banker had enough money and personal contacts to cover the complete amount that the Crown needed each year. Third, a banker could die and then had to be replaced as soon as possible. The sovereign also tried to keep all of the bankers because it was the only way to avoid critical situations where the banker could force the king to do expensive concessions.

So, to play the game with only a banker it was dangerous for the king because of the problem of market power that the lender could accumulate. However, to open the door to many bankers was a bad strategy because it could decrease the confidence of the lenders in the cooperative behavior of the sovereign (figure 3). They could think that the cooperation of the last one was indifferent to the Crown, and then, who was the last one? The outcome would be that nobody would want to cooperate.

The solution was to play the game with many lenders at the same time, but treating each banker, as if he were the only one. The king would divide the total amount of credit that he needed each year, *M*, in portions, M1, M2, M3, …, before borrowing. He offers a portion to each

[12] See details in Weingast (1997).

banker, offering guarantees that the rest, until completing the whole amount, will be reached from others. Although there could be many bankers in the negotiations, the king makes explicit to everybody that each lender is unique and has no substitute because he needs him to complete the whole amount of credit, *M*. To show lenders that this compromise is true, the Crown has to treat to everybody in the same way, avoiding the appearance of preferential treatment in credit negotiations among them. This strategy means that *B* has the same value in all the games with all the bankers. In other words, the king will play only one strategy even though he is playing with many lenders at the same time.

Each banker will play, thinking that he is the only one bargaining with the Monarchy, and the value of *B* does not depend on the number of bankers lending or on their quality for the financial system of the Monarchy. If *B* has a large value, it is for everybody. On the other hand, when there are several bankers willing to lend, a banker will be more confident about the good behavior of the king in the game because it could mean that the king is able to accomplish his promises. The actions of others could be a source of information about the situation of the king in the game. It would be a way to confirm the banker's beliefs about the high probability of R and the huge value of *B*. If a banker knows that nobody wants to lend, it is going to be difficult to convince him as well.

Treating everybody in the same way means that even though the value of one banker could be less than *B* for the Monarchy, the king is obligated to honor his agreements if he decides to cooperate with the rest of bankers. The king will honor the contract of credit because his payoff will be higher choosing cooperation.

The same uniformity in the strategies happens among the bankers. The possibility of not participating in a game is not a credible solution for a banker when others choose to cooperate, because his payoff will be always higher cooperating if he knows that the king is going to honor the contract.

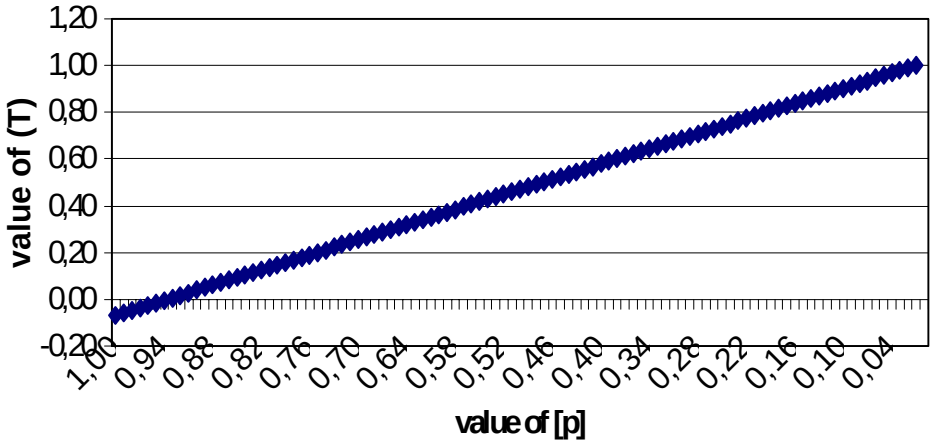
*A real case: banker's behavior with loans offering 8 per cent of interest*

The game allows us to draw several conclusions about the expected behavior of the banker based on: (1) the probability that the king honors his promise at the end of the game (banker's beliefs about R), (2) the conditions offered in the contract to the banker (banker's payoffs) and (3) the benefits of cooperation for the Crown (king's payoffs).

Let us consider that the king borrows an amount from the banker offering him 8 per cent of interest. (The values of the variables will be: $M = 1$, $i = 0.08$). This interest is pretty realistic given that it was the regular interest paid by the Spanish Monarchy during the first half of seventeenth century (see figure 1). Using the inequality (1), figure 4 shows the combination of values of non-monetary rewards *T* that allow cooperation from the banker for different values of [p] (see some values in appendix III).

When the banker is convinced that there are not funds to repay, [p] is zero, the banker will cooperate only with a value of *T* higher than 1. It means that the king has to offer the banker a value of non-monetary rewards bigger than 100 per cent of the principal amount of the loan to get his cooperation. In this case the banker will lend just for the non-monetary rewards present in the game and he will not care about the revenues of the Monarchy.

Figure 4. Evolution of non-monetary rewards depending on the value of *g1* and [p]




If [p] is 1, the other extreme, there is no doubt that the king has revenues to honor the agreements, with a huge value of *B*, the banker will cooperate with *T* equal to zero (figure 4 shows negative value, but it is not possible for the king offers negative rewards). One of the most interesting conclusions derived from this graft is that the game does not need to offer non-monetary rewards when the banker is convince that the king will honor the contracts.

Another important conclusion drawn from this model is that the banker does not need to be absolutely sure that the king is going to cooperate (the value of [p] does not need to be 1), to choose cooperation. The relationship between king and banker is possible with lower values of [p] and different combinations of *T*. For example, when the banker is sure by 50 percent that there are enough revenues to repay the contract, then the king will get his cooperation offering him at least by 46 percent of benefits in non-monetary compensations.

*Alternative to the banker's penalty to promote cooperation in the credit market*

The traditional theory of sovereign debt considers that cooperation is possible because the lender is able to impose a penalty *P* on the sovereign when he decides to renege. This penalty would be the largest credible penalty available to the lender and it could be applied by the lender or by an external institution. If the penalty is the largest credible punishment that the lender can impose on the sovereign for reneging on the loan agreement, then the sovereign will honor his

loan agreement if and only if the cost to honor the contract is less or equal that the penalty[13]. If the maximum credible penalty that can be imposed on the sovereign is a function of a parameter, *P(a)*, then any change in the parameter *(a)* will affect the maximum credible loan to the sovereign.

The theory of sovereign debt distinguishes two problems in the credibility of the penalty. First, Bulow and Rogoff (1989) show that in certain circumstances the lender has limits to punish in the event that the sovereign reneges, because the penalty hurts him as well as the sovereign. Second, there is a problem of credibility in the penalty when there are multiple or potential lenders. With many lenders, a boycott after a default potentially becomes difficult to enforce (Greif, Milgrom and Weingast 1994). It is necessary that lenders coordinate their actions and prevents defection from a credit boycott (Greif 1993). Without coordination the penalty will not be credible and the lender will never cooperate in the game.

This paper argues that neither a penalty nor a mechanism of coordination is necessary to explain why several lenders may accept to lend money to a sovereign. The key element of their credit relationship is not a penalty but the king's beliefs about the high value that the banker has for him (*B)*, and the existence of enough revenues (R) to borrow again in the future.

When the game is being played with different lenders at the same time, the lender may observe the actions of the king with respect to other bankers in order to figure out which is the value of *B* with respect to him. Any action of the sovereign against a potential lender could be a signal for other bankers. This signal can change their beliefs about the game. For example, it could mean that the probability of R is too low and then, it will be difficult for the king to get their cooperation.

The commitment of having the same behavior with every banker could explain why, many times, the king pays his debts and did not cheat, even though the value of the credit provided by some lenders is zero or negative for him. And it also explains why the king decides to end the game suspending all payments to everybody instead of doing it only to some lenders. He assumes that after reneging on one contract, it will be a signal of danger for the balance of the

[13] Weingast (1997). The king will cooperate when the penalty is bigger than the payment: $P > M ( 1 + i )$

contracts and it will mean that the king distinguishes among important and less important bankers. To bargain for a new credit again will be more difficult after cheating one banker than after cheating all of them.

*Conclusions of the model*

The model shows some conclusions about the relationship between the king and the banker.

(1) Credit is possible without the ability of lenders to coordinate a collective punishment against the sovereign. In fact, the decision of the king does not depend on what the banker may do, but on exogenous variables, the amount of the Monarchy's revenues and the value of *B* in this model. The first is related to the ability of the Monarchy to repay the contract of credit, and the second is linked to the value that the banker has for the king. The king will try to keep secret any information about the real value of both variables in each game because they reflect the strategy that he will choose in the game, but he will try to show that both have a high value.

(2) The amount of revenues that the king has available each year to bargain with the bankers determine all the payoffs of the game. It could depend on the current income and debt of the Monarchy. A huge amount of debt could make cooperation impossible even though the income of the Monarchy does not change. The king will not be interested in cooperating when he has not revenues because he cannot get the credit that he needs next time, so the value of having bankers available is zero. This outcome has been called bankruptcy in the literature.

(3) Bankruptcies are not an obstacle for the king to get credit again, even from the same banker, because the banker does not choose his strategy in the next game considering that the king has cheated once and he could do it again, but

considering his current payoffs in that game. His decision is taken just looking at the current value of the main variables of the game.

(4) The king may play this game with several bankers at the same time in order to increase the amount of credit available and to reduce the potential market power of only one banker playing. The condition to avoid uncertainty among the lenders is that the king has to commit himself to treat all bankers in the same way, without making distinctions. Then, the value of *B* will have to be the same for everybody. When the king decides to cooperate, he will do it with all bankers. The same happens if he chooses not cooperate.

(5) Beliefs of the king and the banker are an important element of this game to reach cooperation. It is important for the king not only to have funds, but also to show the lenders that they really exist. When it is difficult to get information about the future revenues of the Monarchy (the value of *B)*, to know that other bankers are going to lend improves the good expectations in the game. It could explain why some bankers go together many times to sign on the "*asientos*". It did not mean that they are a cartel but it is the way to increase their confidence about the future action of the king in the game. The king helps the bankers to act in this way, and it does not mean either that he is helping them to be organized as a cartel.

(6) The model shows that when there are several bankers playing, because everybody has the same payoffs, when a banker decides to cooperate, the others will make the same decision. It is not a credible banker's strategy avoiding cooperation when the banker's belief is that the king will cooperate, because his payoff is higher lending. However, it could happen that after several games, a banker is not in condition to lend again or that he died.

(7) The game shows the importance of the non-monetary rewards in order to get cooperation from the banker. They allow a cooperative outcome even though

the banker is not 100 percent sure that the king is going to honor the contracts. The Monarchy has more flexibility to offer the bankers this kind of compensations than monetary payments. For that reason, this game and relationship with a small number of bankers was so convenience for the king and he could choose it to bargain his annual credit instead of borrowing money in anonymous financial markets.

Consider the possibility of playing the same game many times. Each time the game is played, the rules are the same, but the value of the variables could change, so the payoffs may be different. The final decision of both players to play once again will depend on the payoffs of each game.

## III. The behavior of the Spanish Monarchy and his bankers in the credit negotiations

*Credit was possible without the ability of the lenders to coordinate a collective punishment*

The Spanish Monarchy was successful in convincing many merchant-bankers to participate in its financial system, even when it was risky for them. German bankers were the most important financiers during the Charles I's reign. After the first bankruptcy in 1557, many of them left the negotiations, permitting the arrival of more Genoese bankers[14], but the Fugger remained in Spain working with the Crown until the 1640s. Genoese and German were not the only ones. It also is possible to find other Italians, Portuguese and Castilians.

Many bankers came from the same city or country but they were always rivals. The lack of collective action against the Crown was clearly shown before and after each bankruptcy. An example of non-cooperative behavior was documented in 1586. Stefano Doria found that Lorenzo Spinola had been falsifying accounting books with the aid of a royal official. He did that because he had accepted a secret agreement from the Council of Finance to reduce the Crown's debt in

[14] This group became a master of the financial system of the Habsburg dynasty. The German bankers had participated to a large extent in public financing with their own capital, unlike the Genoese, who had not committed themselves to the same extent, and had participated using outsiders´ deposits. As a result, the Genoese withstood the different crisis over time much better. Van der Wee (1977), p. 371

exchange for being paid with good currency. It was against the interests of the rest of the Genoese bankers because they had decided to deal together with the Council in order to reach the best possible agreement after the last bankruptcy. The Crown had recognized the total amount of its old debt because the financers had accepted to be compensated with bad quality payments, but some of the Genoese bankers, like Lorenzo, broke their agreement[15]. Another example of this independent behavior was the lack of collective reaction among the Portuguese bankers against the king when the Inquisition arrested some of them during the 1630´s.

Coordination faced a major obstacle: contract ambiguities and asymmetric information between lenders. Their cultural and geographical diversity made their association almost impossible. Furthermore, the different bankers had distinct incentives even in the same group. Players had personal economic goals and they were in a permanent competition amongst themselves. The free-rider problem was always present. Information asymmetry, slow communication, different networks and kind of businesses implied a very different interpretation of facts among financiers. Without an organization that coordinated responses, it was not likely that all the bankers would have responded together against the king after the abuse of any one banker. However, it does not mean that the king's actions did not influence their beliefs about the negotiation with the Monarchy. Any action of the king against one of the bankers could modify the willingness of the lender to risk his money, as it was described in the model.

The "credit rationing" issue of sovereign debt theory implies that if the ceiling of credit depends on a penalty, the sovereign has to give up more power to its lender in order to increase the amount of credit. The model presented in this paper tries to explain that cooperation is possible without any penalty in the hands of the lender. When the cooperative equilibrium is possible without giving up more power to the lender, the sovereign does not need to be worried about whether or not the bankers has power to decide the price or the amount of credit. The king is free to create competition in the credit negotiation. It happened in the case of the Spanish Monarchy several times.

[15] Canosa (1998), p. 167.

The Crown was not indifferent to the potential threat from a powerful cartel of bankers. To avoid this threat, the Council of Finance looked always for new bankers, trying to open the negotiation to more lenders. The Genoese bankers were the bigger and more efficient group, but not the only one.

Philip II was convinced of the benefits of plurality when he invited some Castilian bankers in 1575 to come to the Court to lend money[16]. Spanish bankers like Pedro de Maluenda, Simón Ruiz, Diego Vitoria, among many others, found attractive to enter in the credit negotiations. However, they could not offer the same amounts of money lent by the Italians, even when the Monarchy offered them very good conditions in the contracts. Moreover, their connections were available only in a small number of European cities[17]. In spite of these drawbacks, the Monarchy supported them in the negotiations. With this action, the king wanted to limit the strong power that the Genoese group had.

Philip IV tried to do the same with the Portuguese. Genoese bankers were putting up many obstacles for accepting "*asientos*" after 1621. The Council had to accept many of their expensive demands and the reputation of the Crown suffered when the royal officials had problems in carrying them out. In 1626 a group of Portuguese, Manuel Rodríguez de Elvas, Nuño Díaz de Brito, Manuel de Paz, Simón Suárez, and Juan Núñez Saravia were invited to sign an *asiento* in Madrid to lend 400.000 escudos[18]. Philip IV recognized that this contract had been signed "in order to increase the number of bankers, and also to encourage my subjects from Portugal to participate in this kind of *asientos*"[19].

Many times the new bankers did not lend money more cheaply than the veterans because the more efficient agents were already working for the Crown. That higher cost for the same or lower quality of financial services was justified by the intent of reducing the demand of expensive conditions in new *asientos* from formers bankers. If they saw how a lot of non-

[16] Ruiz Martin (1990a), p. 19.
[17] Ruiz Martín (1990a), p. 19. Lapeyre (1953). It has been shown that they just were able to lend small amounts of money, and usually inside of Castile.

monetary benefits of "*asientos*" went to others, it could have been a strong incentive to reduce their exigencies. The Council of Finance preferred to pay a higher cost in the *asiento* of 400.000 escudos because: "the value of having Portuguese in the Court to deal with them is higher than the price of this *asiento*"[20].

Although the Portuguese were important in the financial system of Spain, they were not the only group used by the Crown to increase the number of bankers during the Philip IV's reign. In 1633, the Council of Finance was worried about the consequences of losing businessmen like Simón Suárez and Marcos Fernández. In its opinion, "it would be convenient to cheer up the bankers that we have while we look for new ones. This is the way to have enough bankers available to borrow and also compete among each other, with the outcome that we will get better *asientos*"[21]. In 1638 the Crown, with a great deal of exasperation, was looking for lenders in several European cities. The goal was "shutting out the necessity of the Genoese bankers for *asientos* in all places"[22]. The Crown looked for new bankers in Antwerp in the 1630´s. The Portuguese had the best contacts there, but the royal officials also found people from Milan, Naples and Florence willing to lend[23].

*Bankruptcies were not an obstacle to repeat the game*

The model shows that a possible obstacle to get cooperation in the game of credit is the inability of the king to honor his agreements because [p] becomes zero or close to zero, or *B* has a value too much low. When the banker is completely sure that there are not revenues (NR), the equilibrium in the game is (NC), unless the king offers a value of *T* higher than 100 percent. Only when the king obtains new funds again and the banker notes it, the king will be able to negotiate new credits with smaller values of *T*.

[18] AGS CJH 621. Consulta, August 17, 1626. At least since 1622 there were negotiations with Portuguese merchant-bankers. Boyajian (1983), p. 17.
[19] AGS CJH 656. Cédula, January 31, 1627.
[20] AGS CJH 621. Consulta, August 17, 1626.
[21] AGS CJH 701. Consulta, November 12, 1633.
[22] AGS E 3347. Letter by Conde de Siruela, Génova, February 15, 1638.
[23] Ruiz Martin (1990b), pp. 60-61.

The king could get more revenues without ending the cooperative strategy with the bankers in the game. In order to improve a bad financial situation, the Spanish Monarchy had two options: increase his revenues or reduce his debt. The first just depended on the ability of the Monarchy to increase the fiscal pressure in the kingdom or to create new taxes.

The Spanish Monarchy preferred the second option. A bankruptcy was a mechanism to recover part of the income blocked by old credit negotiations when a new game of credit with its bankers became impossible. The Council of Finance declared bankruptcy several times: 1557, 1560, 1575, 1596, 1607, 1627, 1647, 1652, and 1662. Some bankruptcies arrived as a consequence of periods where there were not more funds to bargain (Nature chose NR). Others were provoked by the belief of the king that the cooperation of the banker was not necessary to win the war (the value of B was too low).

These episodes were an important mechanism to improve the financial situation of the Crown. They were not wholesale repudiations of obligations, but a rescheduling of debts[24]. Bankruptcies reduced the Crown's debts in the short-run, converting the short-term debt into a long-term debt, which took the form of public debt (*juros*). The *juros* delayed the payments for more time than had been settled in the "*asientos*", and gave up other kinds of compensations more convenient for the king[25]. The agreement settled with the bankers after each bankruptcy was called *Medio General*. Many bankers had strong reasons to accept these agreements because they needed to recover quickly as much as money they could in order to save their reputation in the fairs of payments and other businesses, but they were unable to enter again in new negotiations.

With bankruptcies, the threat of default disappeared for an indeterminate number of years at the credit negotiations. Everybody knew the huge incentives of the Crown to play (the

[24] Thompson (1994), p. 160.

[25] In part, the financial problems of Fugger in the 30´s were caused by the accumulation of arrears to more than a million ducats, especially from the "Millones", one of the best payments that a banker could receive. The problem was that the Crown used the revenue to promise more payments than the money that could be collected from it.

value of *B* becomes as high as before) and the cooperation seemed very safe again because there were revenues available (R).

An example of how the beliefs of the bankers about their profits in the game changed after a bankruptcy is shown by what happened after the suspension of payments in 1596. The Monarchy was able to borrow again from the group of bankers trapped in the default after the *Medio General* had been signed. They provided 4.5 million *escudos* starting in January 1598 in Antwerp, Dunkirk, Lille and Namur[26]. This *Medio General* was a good deal for the bankers and many of them could recover a great part of their old debts, so they entered again into the credit negotiations with the Spanish Monarchy.

A bankruptcy served to reduce uncertainty in the credit game, but it came at a cost. This mechanism pushed some bankers out of business, because they received public debt instead of cash. They were not able to lend again even if they wanted to do it. It was a bad outcome not only for those affected bankers, but also for the Monarchy. If the king repeated the suspension of payments many times, he could lose all his bankers, something that the king did not want. The king of Spain only used the bankruptcies in very extreme cases, when it was expected that the bankers would not want to lend again and there were no other options to increase revenues.

The success of bankruptcy to repeat the game also requires new bankers or extra cash available when a new game started. The king would not be able to renegotiate the old debt in the *Medio General* if the Monarchy did not have a credible alternative to provide credit for some period. An example of this happened during the suspension of payments of 1596. Right away after the bankruptcy, the Monarchy excluded the Fugger in order to get their credit during the hard year of negotiations with the rest of bankers affected by the default. The Fugger provided one million escudos in Milan in July 1597[27]. They were the most important creditors until the

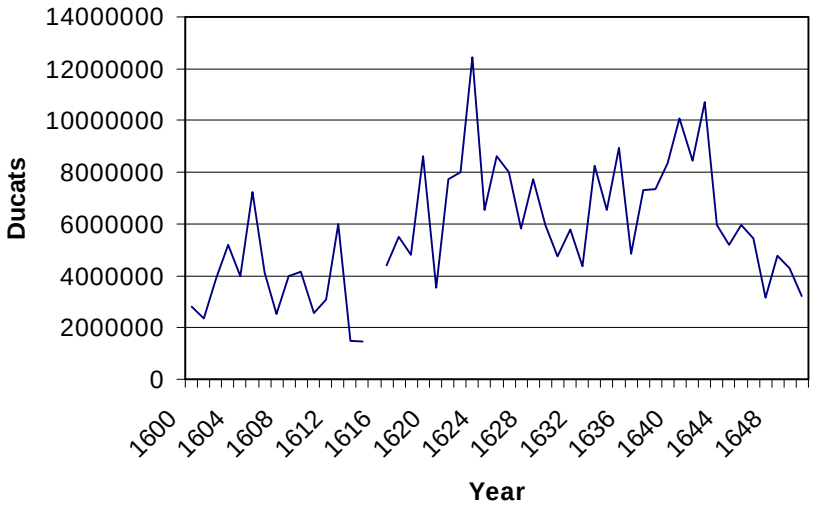
[26] Sanz Ayan (1999), p. 90.
[27] Sanz Ayan (1999), p. 87.

*Medio General* of February 1598. The American silver of the king also played a similar role during the times the negotiations were blocked[28].

Other examples show that new bankers were invited in after every bankruptcy. The 1557 bankruptcy was the real entry of Genoese, the 1575 the Monarchy invited some Castilians bankers and there was attempts to create their own network of factors in Europe; the bankruptcy of 1627 was the moment when the Portuguese arrived at the finances of Castile. And in 1647 the king broke the game to expel the old Portuguese bankers and to introduce a new group of Genoese financiers and Portuguese merchants.

Despite the frequency of the bankruptcies, the Crown always reached an agreement with its creditors very quickly, and they resumed their financial services immediately afterward. The trend shown by the annual amount of the *asientos* contracted during the period 1598-1650 shows the success of the Crown in bargaining with the bankers even when there were regular defaults (figure 5 and appendix V).

Figure 5. Value of "*Asientos*" lent by bankers to the Spanish Monarchy, 1600-1650.




Source: Gelabert (1999), p. 231.

[28] Álvarez Nogal (1997a).

Figure 5 suggests that the bankruptcies did not alter the ability of the Monarchy to borrow because they were part of the game. On the other hand, the bankers did not make irrational decisions when they decided to restore their credit lines. As history shows, they were able to cooperate with the king in a stable way for many years before the next suspension of payments took place. The willingness-to-pay of the king was credible and real at the same time, doing the cooperation profitable for both parties while it lasted.

After a suspension of payments, the bankers had to choose between leaving the game permanently and thereby losing all of their investments, or finding a solution to recover the debt in a long-run horizon, beginning a new game with similar characteristics. If the Crown offered that possibility, the value of a new game for the bankers would be biggest because the risk of a new bankruptcy would be remote. This is the explanation of why, after breaking the game, the bankers less affected by the default could choose to play again as long as they had a way to get their old arrears.

*Non-monetary rewards was an important part of the game: social links and privileges*

Non-monetary rewards, *T*, were an important element of this game of credit, which enabled the Spanish Monarchy to borrow in the short-term. These rewards explain why risk-averse individuals would choose to play this game. This mechanism permitted the players to link the actions inside the credit relationship with other different social and economic spheres outside the game, where the Crown and bankers were also present. Also spreading out the consequences of their liability in the "*asientos*" to a more extensive relationship, the bankers could increase their confidence and the present value of playing the credit game[29].

The bankers would play to get other benefits not easily quantifiable, like social status, power, prestige, political influence, doors opening to other businesses, etc. The economic sociology calls attention to the mixture of economic and social motives that people pursue while

[29] Other authors have described similar mechanisms in other situations. Conklin (1998) has described how three institutional circumstances bound the Spanish Crown to repay domestic holders of public debt (juros). Zerbe and

making economic decisions[30]. This idea is related to people pursuing multiple purposes simultaneously in intersecting social formations. People want sociability and hope to be liked, approved and admired by others. Bankers and the king of Spain had not only economic, but also social needs in their "objective utility functions". All those benefits offered by Madrid as center of a great political and economic empire, could be more satisfying to the bankers than the amount of money earned on their loans by the interest, *i*, promised in their contracts.

A very important characteristic of this variable is that many of the non-monetary benefits were enjoyed right after bankers started to play, and they could not be confiscated by a bankruptcy. It implies that *T* did not represent cumulative benefits, but current benefits which bankers readily used in each period.

It is important to note that the banker maintained all these profits only while he was involved in the credit negotiations. Any problem of a banker to maintain his cooperation with the Monarchy in the credit negotiations could damage his social position in Madrid and the rest of his businesses. A bankruptcy was always a great threat for the banker because a bad renegotiation of the debt could leave him unable to restore its financial services. Then, he would lose the privileges that he enjoyed in Castile. The fear of being unable to continue in the credit negotiations with the king kept the bankers from making bad decisions lending to the Monarchy and it was an incentive to compete with other bankers. Thus, non-monetary rewards cannot explain completely why the lender decided to provide credit and they were not enough compensation to assert that bankruptcies were not a concern for the bankers, but the non-monetary rewards provided several incentives to take certain risks because they altered the banker's payoffs of the game.

At the same time, these social relationships might be the best mechanism for sharing information among individuals and business inside the game of credit. As a consequence, living in the Court was an essential part of it. On one hand, it gave lenders the information necessary to

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Anderson (2001) have shown that cultural matters are essential in solving collective action problems in the California gold fields.

improve their expectations about the behavior of others in the game. It was the main source to improve their beliefs about the game. On the other hand, the king used the presence of bankers in Madrid to establish with them a close relationship as an incentive for their participation in the game. A close friendship with the king could be worthy enough for a banker to lend[31].

There were two attractive non-monetary reasons why bankers were interested in dealing with the Habsburg dynasty in Spain. The first was the opportunity to obtain privileges in markets that were regulated by the Crown[32]. Bargaining with the Crown was the key for opening the door to other less risky business ventures in Castile. For instance, the Fugger obtained the administration of two important rents: Almaden and the revenues from the "Órdenes Militares"[33]. Julio Cesar Scazuola, manager of a Fugger firm in Castile in the seventeenth century, became "*Tesorero General de la Santa Cruzada*"[34], an administrative position that controlled a substantial part of Castile's silver circulation. The Portuguese in the seventeenth century were known for their capacity to control the Castilian fiscal system, especially customs[35]. Moreover, they also had a huge interest in trade with American and Asian colonies[36]. Portuguese merchants imported clothes, grain and wood from Northern-Europe, and exported wool, fruit and oil from Castile. They obtained licenses to enter in these protected markets because they lent money to the Monarchy.

The second reason to cooperate with the Spanish Monarchy was that for many years, the king of Spain was the owner of huge amounts of precious metals and controlled part of their production and transference throughout Europe. These resources probably constituted the Genoese' primary motivation in risking their capital in the "*asientos*".

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[30] Granovetter 2001.
[31] Frequent economic interactions among the same individuals gave rise to "friendliness", and satisfaction from friendliness motivates them to interact further, socially as well as economically (Homans, 1950).
[32] Carande (1945-67) vol. 3, pp. 386, 419, 458 y 467. Ulloa (1963), pp. 161, 229-232, 250, 267. Both authors give examples of royal monopolies in Castile controlled by Genoese during the reigns of Charles I and Philip II. In Sicilia: Trasselli (1978), p. 202. It is also possible to observe the same behavior in the Austria Monarchy. Pickl (1986), p. 155.
[33] Matilla (1958).
[34] Domínguez Ortiz (1960), p. 140
[35] Israel (1990), pp. 355-417.
[36] Serrrano (1994). Boyajian (1993).

*Another non-monetary rewards: profits from moving silver through Europe*

It is hard to test this model with social rewards and privileges because they are difficult to quantify. However, we can test the role of *T* in the model of this paper using the banker's profits reported for some scholars from controlling the American precious metals of the Spanish Monarchy and the main fairs of payments in Europe at the same time[37]. For example, Boyajian asserts the profits from bullion export were greater than the profits from interest and exchange in the contracts. Profits from silver exports using the fairs of exchange have been calculated between 11 and 25 percent during Philip IV's reign. It was higher than the percentage promised to the bankers as interests on the loans[38]. We can consider these profits as non-monetary rewards obtained by the banker from the cooperation with the Spanish Monarchy, because the king did not have to pay it. Actually, the king could not obtain those profits because the bankers were the only owners of the fairs of exchange. Many *asiento*s during the Philip's reign included a clause specifying that the banker will not need to start providing money until receiving a substantial part of his monetary returns[39].

Figure 4 and appendix III show that when the value of *T* is a 25 percent of the loan and the interest of the loan is 8 percent, the sovereign will be able to get credit when the lender is 73 percent sure that the king will repay. A wide margin of uncertainty is not an obstacle to get cooperation from the banker. Here we are just considering *T* as the benefits from exporting silver to Europe through the fairs of Italy because it is easier to calculate.

The gold-silver ratio and the silver-copper ratio likewise led to considerable strain on the local economy during the sixteenth and seventeenth centuries[40]. The goal of many bankers was to control the manner in which silver arrived, and for many years Castile was the main harbor of

[37] Carande (1968) showed the close relationship between "asientos" and American precious metals during the Carlos I's reign. Alvarez Nogal (1997b) did the same for Philip IV's reign.
[38] Boyajian (1983), p. 171. Ghilino (1996).
[39] Alvarez (1997a), p. 334. AGS. CJH 1040. Asiento with Andrea Pichinotti, 13/03/1655. Andrea provided 405.000 esc in Antwerp and the Crown paid him 226.500 ducats of silver in Cadiz before.
[40] The enormous but unequal expansion of the production of precious metals in this period widened opportunities for speculating on the difference between the official mint ratios and the market value of precious metals. In the Middle East, and especially in the Far East, silver was valued much more highly than gold was in Western Europe. Thus, the western merchant gained from paying for his purchases in the East using silver[40].

substantial amounts. It was impossible to have access to the Castilian silver markets and not participate in the financial system of the Monarchy, especially when the king was looking for credit and bankers desperately.

A good example of the lender's interest in controlling Spanish silver was the crisis suffered by the Genoese bankers when Philip II cut his cooperation with them temporarily in the 1570s. For months, the Council of Finance sent money to Flanders using other methods, far away from the markets controlled by Genoese bankers[41]. It was bad for the king, but also for the bankers.

*Playing with many bankers but treating all of them in the same way*

The king played the game of credit with many bankers at the same time because no one was able to provide all the credit that the Monarchy needed. This implies that the king had to facilitate the confidence of each banker in the game. For that reason, the sovereign permitted the information about the credit negotiations to become public knowledge. The king also invited several bankers to the credit negotiations at the same time, discussing the amount of credit that he needed with them as a group and dividing among them the total amount. Each one will provide his portion individually, knowing what the others were doing.

The most important negotiations about the credit in Madrid every year were the *Provisiones Generales.* They took place in the Palace of the king at the end of each year. All bankers were invited for the Council of Finance to know the amount of money that the king needed. The negotiations could be maintained individually or in groups, but everybody was aware about the conditions and the success of others. This information was provided many times for the own Council of Finance. He was very interested to celebrate in public that a banker or a group of bankers had decided to sign the *asientos*.

To bargain with the king as a group had advantages. Sometimes, in order to reinforce their position in front of the king, the bankers bargained with the Crown and signed an *asiento*

[41] Ruiz Martín (1998), p. 404. The new fairs of Piacenza were almost blocked.

together, even when each one had absolute and individual liability about his own part of the contract. It means that when a banker was not able to provide the amount promised, the rest of bankers were not responsible for it. In fact, they were not obligated to increase their quota to cover the failure of their colleague.

Bargaining together was attractive for the banker because it provided more information about the conditions offered by the king to other bankers and about what was going on in the credit negotiations. In this sense, it is possible to observe signals of temporary cooperation among bankers. This coordination was easier when they were from the same city or had cultural roots in common, but even in these cases, they were always competitors.

This common strategy had one of its better moments between 1598 and 1609 among the Genoese group, when these financiers signed an 88 per cent of the total number of "*asientos*"[42]. However, it does not mean that the Monarchy was bargaining with just a group because they had to compete with the bankers that were providing the balance of 12 percent of the credit.

Years later, especially between 1621 and 1626, it is also possible to observe among the Genoese group a strong capacity to bargain "*asientos*" collectively. For example, when the Crown settled the conditions of credit in 1626, the bankers said that "they would join, they would deliberate about it together and afterwards would offer a final answer"[43]. Finally, they rejected the initial proposition explaining their reasons and conditions. This cooperation among bankers was common only during the process of negotiation, not after the money had been advanced.

One could argue that the king might have thought that working with many lenders, cheating some of them, the Monarchy would not suffer any consequence the next time because there would be other bankers available. However, this behavior would spread among the bankers the belief that the sovereign has only interest in collaborating with the most important bankers. Problems among the bankers to identify who was more or less important would have spread the belief that everybody could be cheated. If more lenders were playing, it created more

[42] Doria (1986), p. 69.
[43] AGS CJH 621, Consulta, July 12, 1626.

uncertainty in the game, more probability to be cheated and less willingness to enter into the game.

To avoid this bad outcome, the Spanish Monarchy played the game with each banker, as if each banker was the only one lending to the Crown. Much historical evidence shows this kind of behavior in the actions of the Council of Finance. The goal was retain them as friends and allies as many times as it was possible. Then, the amount of credit lent by a banker was not related to his importance in the game of credit. In fact, some bankers lent less money than others at the beginning of their cooperation with the Monarchy, and after some years they became more and more important in the financial system of Spain.

An example of this is the way that bankruptcies took place. When there were no revenues and the king had to renege its contracts, many times the king had enough money to pay some bankers at least. He could have maintained the cooperation with the most important group, defaulting the debt of the rest. However, following that strategy would change the expectations of all lenders about the value of *B* in case the game would be repeated again. It was very difficult for the king to pay only some bankers and default the rest without affecting the beliefs of players. Doing that would mean that the king was distinguishing between "friends" and "enemies". As explained above, in order to avoid uncertainty among the bankers, it was very important that the value of *B* remained high and the same for all of them.

Table 5. *Asientos*, amount promised and real payments with the treasure arrived in 1629 (ducats).

| Hombre de negocios | Date of the *asiento* | *Asiento* | Promised | Payment | % |
|---|---|---|---|---|---|
| Gerónimo Fugger | 08/02/1629 | 780.000 | 150.000 | 61.500 | 41 |
| Herederos Marcos y Cristóbal | 24/01/1629 | 743.492 | 50.000 | 20.500 | 41 |
| Octavio Centurione | 08/02/1629 | 450.000 | 100.000 | 41.000 | 41 |
| Lelio Imvrea | 08/02/1629 | 390.000 | 80.000 | 32.800 | 41 |
| Agustín Giustiniani | 19/02/1629 | 390.000 | 80.000 | 32.800 | 41 |
| Nuño Díaz Méndez | 08/02/1629 | 253.418 | 50.000 | 20.500 | 41 |
| [44]Simón Suárez | 23/03/1629 | 218.333 | 50.000 | 19.885 | 39,77 |
| Duarte Fernández | 23/03/1629 | 218.333 | 50.000 | 19.885 | 39,77 |
| Manuel de Paz | 23/03/1629 | 218.333 | 50.000 | 19.885 | 39,77 |
| Juan Núñez Saravia | 23/03/1629 | 240.000 | 52.000 | 21.320 | 41 |
| Juan Gerónimo Spinola | 05/04/1629 | 61.000 | 2.500 | 1.025 | 41 |
| Total | | 3.962.909 | 714.500 | 291.100 | 40 |

[44] The difference until getting 41 percent was also paid in the Casa de la Contratación but using money from a different source. The same happened with Duarte Fernández and Manuel de Paz. Every banker received the same proportion on his payment.

Source: Archivo General de Indias. Contaduría. 362A-2.

For that reason, the procedure in each bankruptcy was always to default first all payments to all bankers. After that, the Crown and lenders negotiated an agreement, called *Medio General*, to resolve their differences about old debts. The agreement fixed the amount of debt that the king would pay in the future and the way the debt would be paid. In this negotiation, already outside of the game of credit, the Monarchy could treat each banker in a different way, depending on his importance and value for the next possible games.

Other examples of how the Monarchy treated all bankers in the same way was the mechanism used to pay debts when the king did not have enough money for everybody in some specific fiscal offices. In those cases, everybody received the same proportion according the amount initially advanced.

The *Casa de la Contratación* in Seville was one of the royal offices with more pending debts during the seventeenth century. The American treasure arrived there every year and all bankers wanted a share, but the problem was that the Crown promised more payments than the amount of money arrived on the fleets. Each time this happened, the Council of Finance ordered to pay to each banker the same proportion of money with respect to the amount promised in the contract by the king. The smaller banker received the same proportion as the most important financier.

One of the many examples of this behavior was the distribution of the silver that arrived in the fleet of General Larraspuru on April 1629 (table 5). In the *asientos* the king had promised to give 714.500 ducats to the bankers, but after paying the mercury to the Fugger and reserving something for the ordinary expenses of the royal administration, the Crown only had 291.100 ducats available. Instead of paying first the most important bankers, Gerónimo Fugger and Octavio Centurione, the Monarchy divided the money among all the bankers, paying each one the same proportion, by 41 percent, of the amount initially promised.

*Beliefs of the banker are important to play the game*

The model shows that when the bankers believe that the king did not have enough revenues (NR) they will not cooperate. This strategy describes many critical moments just before the bankruptcies[45]. For example, in 1626 the bankers did not want to lend more money before getting their promised American precious metals, but the king had secretly decided to use this revenue to bargain for new "*asientos*" in the next coming months. He did not have other funds available at that time[46]. In the summer of 1626, the Council of Finance expressed its concerns for "the huge problems surged in order to settle out the final '*asiento de Provisiones Generales*' (…), but even after getting it, more money was needed for Flanders, the navy, the all frontiers, forts…"[47].

The situation in Flanders was critical because even the "*asientos*" that had signed, were not being carried out. This action from the bankers was terrible for the Crown because it was impossible to replace that amount of money in the short-run. It showed that the bankers avoided lending because they knew the problems of the Crown to pay the old debt and the new credits. There were high probabilities that the movement of the king in the third stage of the game was (NR). The suspicions were true and in January 1627 there was a full suspension of payments from the king.

The critical role of N in the second stage of the game makes it important for the king not only to have revenues, but also to show the lenders that those funds really exist. The Monarchy realized many times the importance of the banker's beliefs about the revenues available in order to get new credits. Those beliefs could be modified depending on many different factors.

The banker could monitor the revenues available looking at the amount of debt. Any problem to honor the debt would indicate to the lender that the king would have problems to honor the next credit contracts and he will be more reluctant to lend again. A situation like this happened during the 1630´s. A series of delays in compensation from the Crown caused the bankers to freeze their credit in Europe until the money promised by the sovereign arrived in

[45] Alvarez Nogal (1997a), pp. 123-144.
[46] AGS CJH 622. Consulta, December 10, 1626

Genoa[48]. In this case, the lender could also delay the provision of credit according to the contract signed without being punished by the king[49]. For months, the Spanish government could not obtain credit, which caused great damage to the Monarchy, but because they were temporary problems, a bankruptcy was not necessary.

The Council of Finance was always aware that a delay of payments affects the banker's belief about the ability of the king to honor the contract. It could bring a reduction of credit and more obstacles to borrowing: "when (the bankers) do not receive compensations easily and satisfactorily, but delay of payments in this kind of business, not only brings discredit to the king, but it cost money because the businessmen avoided making new contracts"[50].

As the model predicts, the amount of arrears are not decisive to constrain the behavior of the banker. The bankruptcy of 1626 is a good example. Although the bankers knew the high probabilities that the king defaulted if they objected to lend again, no banker wanted to provide more credit that year. When the bankers were afraid about lending more money, the Crown borrowed from them using these terms: "what sane creditor did not try to maintain his debtor in order to receive the debited payments from him? For that, conserving the health of the king is the way to conserve your own health"[51]. However, there was not an agreement and in January 1627 the king decreed a suspension of payments.

## IV. Conclusions

This paper shows an explanation to illustrating how unorganized communities of lenders, without solving its coordination problems were able to lend money to a sovereign year after year. The case of the Spanish Monarchy during the sixteenth and seventeenth centuries provides a real case to prove the predictions of this model. The paper explains how the Spanish

[47] AGS CJH 622. Consulta, July 1626.
[48] AGS E 3597. Letter by Juan de Eraso, July 5, 1652.
[49] In many credit contracts, the bankers were permitted to punish the king immediately, using a clause of suspension: the option to suspend owed payments if the banker would not receive his compensations on time. It could be applied before the banker had accrued all his money. In this case, the bankers blocked the money they had to send to the armies. It did not imply a breach and hence they could not be penalized.
[50] AGS CJH 621. Consulta, August 30, 1626.
[51] AGS CJH 621. Consulta, July 12, 1626.

Monarchy was able to borrow from many different bankers without being organized to punish the king in case of default. Instead of using the market, the Spanish Monarchy used an institution which rules were not written (a game and shared beliefs) to increase the lender's confidence and get the amount of credit needed. Historical evidence support the conclusions predicted by this model of game.

King and bankers played the game of credit because both knew that they would be worse off if they could not establish cooperation. Bankers were looking for silver, a rate of interest and different non-monetary compensation that they could only find in Castile, while the king needed financial services to pay the wars in Europe and only the bankers could provide them. Without cooperation, the king would not have credit to pay the army, and the bankers would not have access to the Spanish silver. They would lose their privileged position controlling of the financial markets in Europe.

However, one of the shared beliefs in this game was that the non-cooperation outcome affected their payoffs differently. Non-cooperation was an outcome that damaged the king more than it did the bankers. Actually, bankers had diverse ways to do business and lending to the Monarchy was not their only activity, indeed for many of them it was not even the most important. However, the king did not have better options for paying his armies in Europe safety and quickly. The king really needed to play this game every year. Accordingly, the king was very interested in taking care of his bankers in order to play many times with them. It was something well known by all lenders and an important shared belief of this game.

Some models of sovereign debt predict that if there is no penalty, one observes no lending[52]. This constraint is a problem when there are many lenders and property rights are not clearly enforced. The lenders have to be organized to punish the king before lending. However, the models of sovereign debt with penalty present a serious credit rationing issue. The credit that the sovereign may get with these models will always be small amounts because the lenders are

[52] Eaton et al. 1986, p. 488.

very powerful, so they can raise the price, or they are very weak and afraid to risk large amounts of money.

The model presented in this paper does not weaken the “credit rationing” issue raised in the sovereign debt theory but changes the elements that establish the limit. The paper shows that the limit of credit that a sovereign can borrow does not have to depend necessarily on the banker’s penalty. Constraints of this model are: (1) the revenues of the Monarchy available to honor the contracts, (2) whether or not the amount of credit is enough to pay all of the king’s expenses and (3) the importance that the banker has for the sovereign.

If the ceiling of credit would depend on the penalty, the sovereign would have to give up more power to its lender before increasing his credit. When the limit depends on elements linked to the sovereign, the king does not need to weaken his position in the game. It avoids the paradox that the sovereign has to submit or even foster the ability of the lender to impose a punishment on him. Giving power to the banker perhaps is the way to solve a problem but it will create a new one, because a compact group could produce collusion among lenders, reducing the amount of credit available or making it more expensive.

In order to get the whole amount of credit that the sovereign needs, he plays the game with different bankers at the same time. While in other models, the banker avoid lending when there is competition because it increases uncertainty, this model shows that the presence of more bankers is not bad for the game whenever the king does not make a distinction among bankers. Treating each banker, as he were the only one kept his confidence about the game because the bankers knew that the marginal value that their loans had for the king was not negligible. Spreading this belief among lenders was good for the king because it could increase the confidence of each one about the game and when he played the game of credit with many different bankers at the same time, he was able to create “competition” among lenders to avoid any kind of market power from a possible strong cartel. This may permit the sovereign to increase the amount of credit that he can borrow and maintain its price low.

The banker knew that he was unable to punish the king but he could save this problem of uncertainty estimating the value that his cooperation had for the Monarchy. He looked at the way the king treated other bankers and the current revenues of the Crown. He could expect that while they had positive values, the king would cooperate. The king tried to maintain these positive beliefs among the bankers as much as possible.

The bankers knew that the game would not be profitable when the revenues of the king would not be enough to get the credit that he needed. Accumulated debt would gradually reduce the revenues available to bargain and repay new credits in next periods, but the bankers did not know exactly when the bankruptcy would be declared. They estimated the probability of that situation each time they played.

The Crown used the bankruptcies to break those moments when cooperation was impossible because the revenues were not enough to get the amount of credit needed, or the bankers did not have enough confidence about the king's ability to repay. The bankruptcy was the king's way to recover a good position in the negotiation, increasing the confidence of lenders after transforming the old short-term bills into long-term debt. Once the Crown had more funds to offer in the negotiation, bankers started again to cooperate. Each lender knew that the bankruptcy would improve the game doing it more safely because the value of this game continued to be very high for the king.

After 1650, changing conditions compromised the stability of this game. The Crown's silver resources and its political power in Europe went down. The bankers found other opportunities to earn money in business that was less risky. Madrid lost its preeminence in Europe as a political and economic center, reducing the attractiveness of the city´ social environment. American silver began to be controlled far away from the royal administration, and Seville and Spain were no longer the obligated port of silver treasures. The strong social and economic incentives both players had for cooperation disappeared in the second half of the seventeenth century. The game of credit was over.

## V. References


Archives:

Archivo General de Simancas (AGS) (Valladolid, Spain)

- Consejo y Juntas de Hacienda (CJH)
- Estado (E)

Archivo General de Indias (AGI) (Sevilla, Spain)

- Contaduría (Cd)

Published references:

Abreu, D. Pearce, D. and Stacchetti, E. (1990). "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring". *Econometrica*, 58, pp. 1041-64.

Álvarez Nogal, C. (1997a). *El crédito de la Monarquía Hispánica durante el reinado de Felipe IV*, Valladolid.

Álvarez Nogal, C. (1997b). *Los Banqueros de Felipe IV y los metales preciosos americanos (1621-1665)*. Banco de España. Madrid.

Artola, M. (1982). *La Hacienda del Antiguo Régimen*, Alianza Editorial. Madrid.

Atkeson, A. (1991). "International Lending with Moral Hazard and Risk of Repudiation" *Econometrica* 59, pp. 1069-89.

Baumol, W. Panzar, J. and Willing, R. (1982). *Constestable Markets and the Theory of Industrial Structure.* New York.

Bernheim, B.D and Ray, D. (1989). "Collective Dynamic Consistency in Repeated Games". *Games and Economic Behavior*, 1, pp. 295-326.

Boyajian, J.C. (1983). *Portuguese Bankers at the Court of Spain 1626-1650*, New Brunswick.

Braudel F. (1979). *Civilisation matérielle, Economie et Capitalisme, XV-XVIII siècle*, vol. II, París.

Broens, N. (1989). *Monarquía y capital mercantil, Felipe IV y las redes comerciales portuguesas (1627-1635)*, Madrid.

Bulow, J. And Rogoff, K. (1989) "A Constant Recontracting Model of Sovereign Debt". *Journal of Political Economy*, 102, (5), pp. 155-178.

Canosa, R. (1998). *Banchieri genovesi e sovrani spagnoli tra Cinquecento e Seicento*. Roma.

Carande, R. (1949-67). *Carlos V y sus banqueros.* Madrid, 3 vols.

Chari, V.V. and Kehoe, P.J. (1993). "Sustainable Plans and Debt" *Journal Economic Theory*, 61, pp. 230-261.

Conklin, J. (1998). "The Theory of Sovereign Debt and Spain under Philip II", *Journal of Political Economy*, 106 (3), pp. 483-513.

Domínguez Ortiz, A. (1960). *Política y Hacienda de Felipe IV*, Madrid.

Doria, G. (1986). "Conoscenza del mercato e sistema informativo: il know-how dei mercanti-finanzieri genovesi nei secoli XVI e XVII" en Maddalena, A. e Kellenbenz, H. (eds.), *La Repubblica internazionale del denaro tra XV e XVII secolo*, Bologna.

Eaton, J., Gersovitz, M. and Stiglitz, J. (1986) "The pure theory of country risk." *European*, 30, pp. 481-513.

Gelabert, J. E. (1999). "The King´s Expenses: the Asientos of Philip III and Philip IV of Spain, 1598-1650" in Ormrod, W.M. Bonney, M. and Bonney, R. *Crises, Revolutions and Self-sustained Growth.* Shaun Tyas. Stamford, pp. 224-249.

Gelabert, J. E. (1997). *La bolsa del Rey*, Madrid.

Ghilino, S. (1996). *Un banchiere del `600: Stefano Balbi*, Genova.

Greif, A. (1989). Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders" *Journal of Economic History*, 49 (4), pp. 857-82.

Greif, A. (1993). "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders´Coalition". *American Economic Review*, 83 (3) pp. 525-48.

Greif, A. (1994). "Cultural beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies". *Journal of Political Economy*, 102, (5), pp. 912- 950.

Greif, A. Milgrom, P. and Weingast, B.R. (1994). "Coordination, commitment, and enforcement: The Case of the Merchant Guild*" Journal of Political Economy* 102 (4), pp. 745-76.

Greif, A. (2002). *Historical Institutional Analysis.* Stanford. (Forthcoming).

Grossman, H. and Van Huyck, J.B. "Sovereign Debt as a Contingent Claim: Excusable Default, Repudiation, and Reputation", *American Economic Review*, 78, pp. 1088-97.

Hernández, B. (1997). "Hombres de negocios y finanzas públicas en la Cataluña de Felipe II", *Revista de Historia Económica*, XV, nº 1, p. 65-81.

Hoffman, P.T. and Norberg, K. (ed.) (1994). *Fiscal Crises, Liberty and Representative Government, 1450-1789*. Stanford University Press, Stanford,CA.

Israel, J. (1990). "Spain and the Dutch Sephardim, 1609-1660", in *Empires and entrepots: the Dutch, the Spanish monarchy, and the Jews, 1585-1713*, London, p. 355-417.

Knight, J. (1992). *Institutions and Social Conflicts*. Cambridge. Cambridge University Press.

Kreps, D.M. (1990a). *Game Theory and Economic Modelling*. Oxford: Oxford University Press.

Kreps, D. and Wilson, R, (1982). "Sequential Equilibrium", *Econometrica*, 54, pp. 1003-38.

Lapeyre, H. (1953). *Simón Ruiz et les asientos de Philippe II*, París.

Maddalena, A. e Kellenbenz, H. (eds.), (1986). *La Repubblica internazionale del denaro tra XV e XVII secolo*, Bologna.

Mandich, G. (1953). *Le pacte de Ricorsa et le marché italien des changes au XVIIe siècle*, Paris.

Matilla Tascón, A. (1958). *Historia de las minas de Almadén*, Madrid.

Miller, G.J. (1992). *Managerial Dilemmas: The Political Economy of Hierarchy*. Cambridge. Cambridge University Press.

Milgrom, P.R. North, D.C. and Weingast, B.R. (1990). "The Role of Institutions in the Revival of Trade: The Medieval Law Merchant, Private Judges, and the Champagne Fairs", *Economic and Politics* 2, pp. 1-23.

North, D.C. (1990). *Institutions, Institutional Change and Economic Performance.* Cambridge University Press, New York.

North, D.C. (1993). *Institutions and credible commitment*. JITE 149, pp. 11-23.

Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge. Cambridge University Press.

Pickl, O. (1986). "Gli Asburgo austriaci e la concorrenza delle grandi banche dal XIV secolo alla fine del XVII" en *La Repubblica internazionale* ... ob. cit., p. 155.

Root, H.L. (1989). "Tying the King´s Hands: Credible Commitments and Royal Fiscal Policy during the Old Regime", *Rationality and Society*, 1, pp. 240-58.

Ruiz Martin, F. (1970). "La banca en España hasta 1782", in VV.AA. *El Banco de España. Una historia económica,* Madrid, pp. 1-196.

Ruiz Martin, F. (1990a). *Pequeño capitalismo, gran capitalismo. Simón Ruiz y sus negocios en Florencia*, Barcelona.

Ruiz Martin, F. (1990b). *Las Finanzas de la Monarquía Hispánica en tiempos de Felipe IV (1621-1665)*, Madrid.

Ruiz Martín, F. (1998). "Las Finanzas del Rey" en VV.AA. *Felipe II. Un monarca y su época*. San Lorenzo de El Escorial, Fundación ICO.

Sanz Ayan, C. (1998). "La estrategia de la Monarquía en la suspensión de pagos del 96 y su "Medio General". in Actas Congreso Internacional Las Sociedades Ibéricas y el Mar a finales del siglo XVI, tomo II, Madrid, pp. 81-95.

Serrano Mangas, F. (1994). *La encrucijada portuguesa. Esplendor y quiebra de la unión ibérica en las indias de Castilla (1600-1668).* Badajoz.

Telser, L.G. (1980). "A Theory of Self-enforcing Agreements", *Journal of Business*, 53, pp. 27-43.

Thompson, I.A.A. (1994). "Castile: Polity, Fiscality, and Fiscal Crisis" in Hoffman, P. and Norberg, K. *Fiscal Crises, Liberty, and Representative Government, 1450-1789*, Stanford. Stanford University Press, pp. 140-181.

Trasselli, C. (1978). "Los genoveses en Sicilia y en Calabria desde el reinado de Carlos V hasta la guerra de los Treinta Años", in Otazu, A. (ed.). *Dinero y crédito (siglos XVI al XIX)*, Madrid, pp. 65-83.

Ulloa, M. (1963). *La Hacienda Real de Castilla en el reinado de Felipe II.* Roma, 1963.

Van der Wee, H. (1977). "Monetary, Credit and Banking Systems" in Rich, E.E. and Wilson, C.H. (eds.) *The Cambridge Economic History of Europe*, vol. V. Cambridge, Cambridge University Press, pp. 290-393.

Veitch, J.M. (1986). "Repudiations and Confiscations by the Medieval State". *Journal of Economic History*, 46, pp. 31-36.

Weingast, B.R. (1997). "The Political Foundations of Limited Government: Parliament and Sovereign Debt in 17th and 18th Century England" in Drobak, J. and Nye, J. (ed.) *The Frontiers of the New Institutional Economics*, pp. 213-246.

Zerbe, R.O. and Anderson L. (2001). "Cultural and Fairness in the Development of Institutions in the California Gold Fields" *Journal of Economic History* 61 (1) , pp. 114-144.

## VI. Appendixes

*Appendix I. Variables in the payoffs of the game*

| | |
|---|---|
| *M* | Amount of credit borrowed by the king in the game |
| *i* | Interest of the loan |
| *F* | Financial services provided by the banker |
| *B* | Value that the cooperation with the banker has for the king |
| [ p ] | Probability that the king fulfill the contract [ p ] = 1 the king will repay [ p ] = 0 the king will not repay |
| *T* | Non-monetary rewards given for the king to the banker |

*Appendix II. The condition of the banker to cooperate*

The payoffs of the banker can be calculated taking in account the value of the different variables in the game. Given the banker's belief, the expected payoff from playing (NC) is:

$0$

While the expected payoff from playing (C) is

$$[p](i+T)+[1-p](-M+T)=[p]M+[p]i+T-M-[p]T+[p]T$$

The banker will lend if and only if:

$$[p]M+[p]i+T-M>0$$

Computing the equation we get:

$$T>M-[p]M-[p]i$$

*Appendix III. Values of T as percentage when the banker lends 1 and the interest is 8 percent, depending on the values of g and the probability that the king default*

| [P] | T for g=0 |
|---|---|
| 0 | 1.00 |
| 0.5 | 0.95 |
| 0.15 | 0.84 |
| 0.25 | 0.73 |
| 0.35 | 0.62 |
| 0.45 | 0.51 |
| 0.5 | 0.46 |
| 0.55 | 0.41 |
| 0.65 | 0.30 |
| 0.75 | 0.19 |
| 0.85 | 0.08 |
| 0.95 | -0.03 |
| 1 | -0.08 |

*Apendix IV. Value of "Asientos" lent by bankers to the Spanish Monarchy, 1600-1650.*

| Years | Ducats | Years | Ducats | Years | Ducats |
|---|---|---|---|---|---|
| 1600 | 2.822.000 | 1617 | 5.496.830 | 1634 | 6.536.116 |
| 1601 | 2.341.932 | 1618 | 4.818.194 | 1635 | 8.925.000 |
| 1602 | 3.890.036 | 1619 | 8.621.099 | 1636 | 4.842.313 |
| 1603 | 5.197.943 | 1620 | 3.545.000 | 1637 | 7.314.000 |
| 1604 | 3.983.829 | 1621 | 7.735.615 | 1638 | 7.360.273 |
| 1605 | 7.233.816 | 1622 | 7.999.000 | 1639 | 8.358.100 |
| 1606 | 4.119.432 | 1623 | 12.442.764 | 1640 | 10.079.400 |
| **1607** | 2.515.361 | 1624 | 6.539.973 | 1641 | 8.472.141 |
| 1608 | 3.990.535 | 1625 | 8.646.000 | 1642 | 10.697.439 |
| 1609 | 4.174.692 | 1626 | 8.013.998 | 1643 | 5.973.393 |
| 1610 | 2.561.332 | **1627** | 5.823.999 | 1644 | 5.183.161 |
| 1611 | 3.078.147 | 1628 | 7.713.308 | 1645 | 5.969.984 |
| 1612 | 5.987.781 | 1629 | 5.946.460 | 1646 | 5.453.600 |
| 1613 | 1.505.000 | 1630 | 4.761.971 | **1647** | 3.168.706 |
| 1614 | 1.450.498 | 1631 | 5.787.500 | 1648 | 4.795.705 |
| 1615 | no available | 1632 | 4.371.182 | 1649 | 4.284.055 |
| 1616 | 4.404.170 | 1633 | 8.254.978 | 1650 | 3.219.768 |

Source: Gelabert, J.E. (1999), p. 231.